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**OPERATIONAL FIRES FOR THE 21ST CENTURY: THE
ARGUMENT FOR A JOINT FIRES COORDINATOR**

by

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Contents

	<i>Page</i>
DISCLAIMER	ii
LIST OF ILLUSTRATIONS.....	v
PREFACE.....	vi
ABSTRACT	vii
INTRODUCTION	1
The Problem.....	1
Parameters of This Paper.....	4
Definitions and Assumptions.....	5
Thesis Statement.....	7
CONFLICTING PERSPECTIVES.....	9
The Ground Warrior's Perspective	10
The Airman's Perspective	11
SERVICE COMPONENT FIRE SUPPORT: THE FRACTURED BATTLESPACE	15
The Decision Function	16
Deep Operations Coordination Center	16
Air Operations Center	17
Battlefield Coordination Detachment.....	18
Detection and Assessment Assets	19
Delivery Systems	21
DIGITIZATION OF THE BATTLEFIELD: ENABLING OPERATIONAL FIRES	25
Advanced Field Artillery Tactical Data System (AFATDS)	26
Contingency Theater Automated Planning System (CTAPS).....	27
Merging Purple Electrons.....	28
THE ARGUMENT FOR A UNIFIED FIRE SUPPORT STRUCTURE	30
The Joint Forces Fire Support Coordinator.....	31
The Joint Fire Support Cell	32
Fire Support Coordination Measures	33
Coordinating Operational Fires	34

SUMMARY.....	38
GLOSSARY	41
BIBLIOGRAPHY.....	42

Illustrations

	<i>Page</i>
Figure 1. Proposed Elements of Operational Fires	6
Figure 2. AOR Delineation.....	35

Preface

The proliferation of information management and precision attack systems now being fielded by the United States' Armed Forces promises exponential increases in the lethality of indirect fires. This is especially true of operational fires, designed to achieve campaign objectives. Yet to realize their full potential, the joint force must overcome shortfalls in joint doctrine and narrowly focused service perspectives of the joint battlefield. This paper will not be all encompassing in describing the best solution for the problem of fusing new systems into a unified combat power, rather, it's intent is to elicit inter-service discussion of how best to coordinate deep attack operations and air interdiction to achieve operationally decisive effects.

I would like to thank my Faculty Research Advisor, LTC "Bo" Hynes, for the advice and direction he provided during this project as well as LTC Jeff Reilly for the initial concept. Two classmates who provided much "food for thought" during the formative stages of this project were Major Dave Timm and Major Gregg Johnson. Both were party to hours of spirited debate over many of the coordination issues raised in this paper and provided this Army Officer with an Airman's view of the joint battlespace.

Abstract

A void exists in current joint doctrine concerning operational fires for the joint task force. This vacuum is doubly troubling when the proliferation of increasingly capable information management systems, digital communications links, all weather target acquisition assets, and precision attack systems is considered. The Persian Gulf War highlighted weaknesses in inter-service cooperation of fire support, but seven years after the conflict, substantive changes to resolve these doctrinal problems remain unmade.

As part of a solution, this paper argues for the creation of a Joint Forces Fire Support Coordinator and a Joint Fire Support Cell to coordinate operational fires for the joint force commander. It further asserts the continued viability of the Fire Support Coordination Line while suggesting the need for a doctrinal boundary delineating the areas of responsibility of the land and air component commanders.

This work uses data on the technical capabilities and interoperability of service component systems to demonstrate that operational fires, offering decisive battlefield effects, are reasonable to assume in the near future. Operational theories from students at the Command and General Staff College, Army War College, and Naval War College are used to support the argument that many of those assets now dedicated to air interdiction and deep attack by individual services should be fused into a unified combat power capable of effecting decisive results at the operational level.

Chapter 1

Introduction

Prairie Warrior 96 and 97 highlighted fires as a potentially dominant force on the 21st century battlefield.

—Major General Leo J. Baxter, Chief of Field Artillery¹

The Problem

The face of warfare is changing. Combined arms operations may be the 20th century endstate for warfare. Throughout the century, the dominant military force has been the land component, and armies have won battles by achieving synchronization of fire and maneuver through a range of doctrinal, materiel, training, and organizational innovations.²

But in the last two decades, the proliferation of information management systems, precision attack weapons, and real time intelligence gathering systems has provided the modern joint task force commander with unique capabilities to shape the battlespace. Heralded by the decisive role played by Airpower during Operation Desert Storm, a tightly woven network of sensors, shooters, and C2 systems may provide the technological framework to meld joint combat systems into the decisive element on the next battlefield. Rather than simply coordinate joint forces, future technology will give the Joint Force Commander (JFC) the ability to apply unified combat power at

operational depth. These operational fires are, potentially, a decisive force on the next battlefield³

As the United States enters the next century two facts are irrefutable, the American military will fight as a joint force and that force will be relatively small. Budgetary and political constraints on the size of the military will prompt the future joint force commander to leverage his technological advantages in target acquisition, information management, and precision engagement.⁴ In a major theater war these advantages will manifest themselves in a program of operational fires that will destroy a numerically superior enemy's military forces and will to fight before they can close on the main battle area.⁵

A significant challenge for the JFC will be to efficiently fuse the unique, often overlapping, and sometimes competing capabilities of the various services into operational fires capable of decisively defeating an enemy force in geographic and temporal depth. The same technological advances that offer such promise also place the services in position to compete with each other for the dominant role in the campaign. This inter-service competition is fueled by the unique perspective each service brings to questions of how best to fight the nation's wars and integrate combat power.⁶ The JFC's failure to meet this challenge may result in confusion and disjointed execution of operational plans that place mission accomplishment and American lives at risk. For an example of such a failure, the student of joint warfighting need look no further than the final days of operation Desert Storm.⁷

At the outset of the ground war, mutual misunderstanding between the Joint Force Air Component Commander (JFACC) and the land component commanders (especially

VII Corps Commander) led to a series of actions that allowed a significant portion of the Iraqi Army's combat power to escape from the Kuwaiti Theater of Operations. As Coalition Forces began their attack on 24 February 1991, the corps commanders and JFC/JFLCC extended the FSCL up to 150 miles in advance of the ground forces. Ground force commanders did this as a precaution against fratricide during what was predicted to be a fast moving, and likely confusing, ground campaign. Also in an attempt to reduce the chance of fratricide, the JFACC mandated that no air interdiction missions would be flown short of the FSCL unless under the control of a forward air controller (FAC).⁸⁹ Even the authority to establish the FSCL was confused, with the JFC/JFLCC, JFACC, and Corps Commanders all attempting to establish different FSCLs at various junctures in the battle. Finally, Army commanders placed restrictions on firing forward of the FSCL without detailed coordination with the JFACC. In effect, these measures made the FSCL a boundary and restrictive fire support coordination measure.¹⁰

By 27 February 1991, the Iraqi Republican Guard Forces Command units in VII Corps' zone were fleeing north to salvage as much combat power as possible. Both the VII Corps Commander and the JFACC knew this was occurring and both realized that it was the perfect time to complete the destruction of Republican Guard forces. But while the enemy units in question were inside the FSCL, they were still beyond the range of VII Corps' artillery. No FAC had observation of the Iraqi units and so no air interdiction missions were initially executed. Eventually, air attacks were coordinated with both fixed and rotary wing assets, but post-war studies have indicated that fifty to sixty percent of Republican Guard units escaped with their equipment.¹¹

In an attempt to delineate areas of responsibility and prevent fratricide, the joint force had unintentionally created a seam in the application of operational fires that the Iraqi military unwittingly exploited. Confusion and misuse of doctrinal terms had resulted in negation of a potentially decisive component of the joint force: air power. The Desert Storm example illustrates the dilemma faced by joint force commanders: How to seamlessly fuse the combat power of the various service components while maintaining the safety and freedom of maneuver for his subordinate commanders. Service specific parochialism, misunderstanding, and distrust still cloud the issue.¹²

We must overcome these inhibitors to joint operational fires. The greatly enhanced systems being fielded today, and those planned for the future, will provide the services with many overlapping and competing capabilities. To date, joint doctrine has not kept pace with technology. The imperative for joint doctrine writers is to develop an authoritative methodology to efficiently integrate the individual service capabilities into a seamless joint fire support system. This system must be flexible enough to allow the joint force to rapidly *decide* what operational level targets to engage, *detect* them, *deliver* the appropriate ordinance on them, and *assess* battle damage (D3A) in near real time.¹³ Successful execution of such a system in support of a land, maritime, or air operation promises decisive results with minimal casualties. This is the promise of technology and what the families of our soldiers, sailors, airmen, and marines rightfully expect.

Parameters of This Paper

This paper will address the integration of joint systems to execute operational fires in the next century. It will propose methods to improve the way operational fires are coordinated and directed within the JTF. This proposal includes establishing a Joint

Forces Fire Support Coordinator (JFFSCOORD) and a joint fire support cell (JFSC) as well as modifying our existing Fire Support Coordination Measures (FSCMs) to ensure the safety of friendly troops. Simultaneously, we must maintain the maximum possible freedom of action for the air component.

Definitions and Assumptions

This paper makes two major assumptions, neither of which are guaranteed in the current fluid fiscal and technological environment. First, it assumes that current funding for information management, intelligence gathering, and attack systems will remain sufficient to support the fielding of the equipment presently scheduled for procurement. Second, it assumes that the services will overcome the issue of interoperability in information management systems and establish common protocols for data transmission.

The term *operational fires* will be used in this paper to refer to the application of lethal and nonlethal firepower to achieve decisive impact on the conduct of a campaign. While operational fires and operational maneuver may take place within the same battlespace, they may have very different objectives. Operational fires are generally *not* fire support and operational maneuver is not dependent on operational fires. Operational fires target and attack land and sea targets whose destruction or neutralization will have a decisive impact on the JFC's campaign.¹⁴

By nature, operational fires are joint fires and rely heavily on air, sea and space assets, as well as land deep attack systems, to succeed. Operational fires include portions of what the Air Force and Navy refer to as air interdiction and what the Army calls Deep Attack. During an air campaign, operational fires may also include Joint Suppression of Enemy Air Defenses (JSEAD) (see figure 1). Though determined by their effect rather

than their geographic location, the JFC will normally employ operational fires forward of the Fire Support Coordination Line.¹⁵

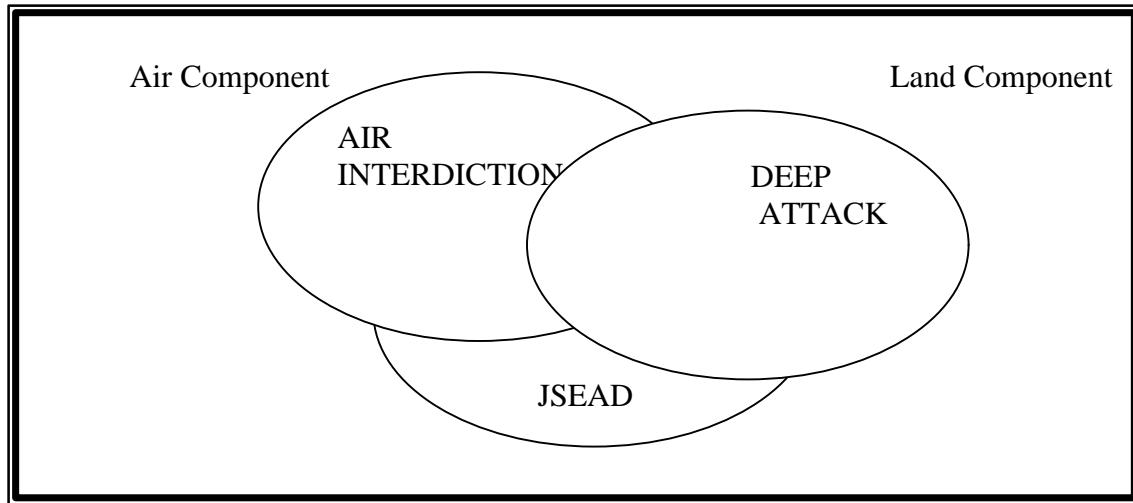


Figure 1. Proposed Elements of Operational Fires

Though not yet a doctrinal term, the second coordinating draft of Joint Publication 3.09 suggests the designation of a Joint Forces Fire Support Coordinator (JFFSCOORD). This position will be responsible to the Joint Force Commander for the coordination and application of joint fires at the operational level to shape the JTF's battlespace and support the JFC's campaign plan and scheme of maneuver.¹⁶

In relation to the JFFSCOORD's responsibilities, *targeting* is the integration of intelligence functions, battle command, weaponeering, operational execution, and combat assessment to **decide** what enemy assets to attack, **detect** those assets, **deliver** joint fires on those assets, and **assess** the effects of the attack (D3A). The ultimate goal of targeting is to track and attack the right targets with the right asset at the right time to support the JFC's concept of fires.¹⁷

Thesis Statement

To leverage the full effect of operational fires in the 21st century, the services must begin now to adopt doctrinal changes in how we conduct fire support operations at the JTF level. Doctrinal vacuums and inter-service rivalries have made the issue of operational fires one of the most contentious in the joint war fighting arena. This situation is a direct result of deep-seated differences in how the services view the definition of air interdiction and deep attack (both inclusive of operational fires), who should control these fires, and what their proper role is on the joint battlefield. This paper will examine these very differing perspectives on operational fires, outline some of the contributing service specific systems now being fielded, and suggest methods to resolve the coordination and control issues concomitant to the application of operational fires.

Unity of effort dictates that the JTF have a single coordinator for operational fires. A JFFSCOORD and JFSC located with the Air Operations Center would fulfill this requirement. The JFFSCOORD will be digitally linked with all service's intelligence/target acquisition systems and positioned to directly coordinate for Airpower, the predominant executor of operational fires. Until the digitization of the battlespace matures to a level that affords the JFC with near total situational awareness, Fire Support Coordination Line should be retained in its present form. To delineate the boundary between the land and air component commanders' area of responsibility, doctrine should establish the Deep Battle Synchronization Line (DBSL).

Notes

¹ MG Leo J. Baxter, "Honing the Edge: State of the Field Artillery 1997", *Field Artillery Journal*, (November-December 1997): 1.

Notes

² BG Leo J. Baxter, "Field Artillery Vision 2020", *Field Artillery Journal*, (December 1994): 10-14.

³ Ibid.

⁴ LTC William F. Furr, USAF, "Joint Doctrine—Progress, Prospects, and Problems," *Airpower Journal*, (Fall 1991): 37.

⁵ Major Thomas R. McCabe, USAFR, "The Limits of Deep Attack", *Airpower Journal*, n.p.; on-line, Internet, 16 October 1997, available from <http://www.cdsar.af.mil/apj/mccabe.html>.

⁶ Lieutenant Colonel Stephen M. Seay, USA, "Joint Fire Support Doctrine—Consensus Please!," (Carlisle Barracks, PA, US Army War College, 1992), 8-33.

⁷ Michael R. Gordon and General Bernard E. Trainor, *The General's War*, (Boston, MA.: Little, Brown , and Company, 1995), 411-413.

⁸ Major David H. Zook III, USA, "The Fire Support Coordination Line: Is It Time To Reconsider Our Doctrine?," (Fort Leavenworth, KS, US Army Command and General Staff College, School of Advanced Military Studies, 1992), 3-4.

⁹ Ibid.

¹⁰ Major Lester C. Jauron, USA, "The Fire Support Coordination Line: Should It Delineate Area Responsibilities Between Air and Ground Commanders?", (Fort Leavenworth, KS, U S Army Command and General Staff College, 1993), 19-21.

¹¹ Zook, 4-5.

¹² Seay, 43-49.

¹³ US Army Field Manual 100-7, *Decisive Force: The US Army in Theater Operations*, May 1995, 5-5.

¹⁴ FM 100-7, 5-3

¹⁵ Ibid.

¹⁶ Joint Publication 3-09, *Fire Support for Joint Operations*, second coordinating draft, July 1997.

¹⁷ US Army Field Manual (FM) 6-20-10, *Tactics, Techniques and Procedures for the Targeting Process*, 8 May 1996, 3-5.

Chapter 2

Conflicting Perspectives

We were a different breed of cat right from the start. We flew through the air while the others walked on the ground.

—General Carl Spaatz (speaking on Airmen)

A fault line between Army and Air Force service doctrine runs directly through the concept of operational fires. Current service doctrine, and emerging joint doctrine, indicates the depth of disagreement concerning the nature, definition, and purpose of attacking the enemy beyond the FSCL but within the JFLCC's area of operation (AO).¹ At the core of the debate is the primacy of each service's war fighting doctrine.

The Air Force emphasizes the wide-ranging capability of Airpower to quickly mass over enemy centers of gravity and deliver the decisive blow in a conflict. Conversely, the Army asserts the necessity to exert control over the enemy's territory with ground forces and views air power as a useful tool in achieving that goal.² The philosophical roots of the inter-service disagreement can be understood by comparing the basic war fighting doctrine in the two services' capstone manuals: FM 100-5, *Operations*, for the Army and AFM 1-1 *Basic Aerospace Doctrine*, for the Air Force.³

The Ground Warrior's Perspective

Army combat operations are doctrinally organized within a battlefield framework consisting of three elements: the area of operations, battlespace, and operations in depth. The land force commander's perspective on the deep battle is shaped by these concepts within which he frames the battlefield.⁴

To the land force commander, his battlespace is delineated by boundaries that define his area of operations (AO). The AO represents physical boundaries within which the land commander operates, but not the limits of his responsibility. The Area of Responsibility (AOR) includes all areas, which may impact on the commander's operations within his AO.⁵ The concept of battlespace is linked to AOR and is defined in FM 100-5 as that area:

Determined by the maximum capabilities of a unit to acquire and dominate the enemy; includes areas beyond the AO; it varies over time according to how the commander positions his assets.

The land force commander perceives his battlespace as a volume that can expand or contract over time consistent with his ability to attack the enemy.⁶

Land operations themselves are divided into rear, close and deep battles. For the Land Component Commander (LCC), deep operations afford him the opportunity to affect future combat by shaping the battlespace in geographic depth and/or time. Current Army doctrine indicates the importance of deep operations by stating that even though the close and deep battles are linked, commanders may pursue separate battle objectives by using either the close or deep battle as the main effort for land operations.⁷

To the LCC, Deep Attack is his method of either shaping the future close fight for his subordinate commanders or achieving operationally decisive results without a close

fight. He accomplishes either of these by using organic long range attack systems such as the Army Tactical Missile System (ATACMS), Extended Range Multiple Launch Rocket System (ERMLRS), and attack helicopters to disrupt, interdict, or destroy key enemy nodes and forces before they can close with friendly forces. In support of this effort, the LCC will also nominate targets for air interdiction that contribute to the execution of his deep attack plan.⁸ Although most Army doctrine still maintains that a close battle will occur as the decisive point of the campaign, the concept that Deep Battle can achieve operational objectives is now part of Army doctrine.⁹ Significantly, the proposal that deep attack as the main effort can be decisive on the battlefield conforms to basic Air Force interdiction doctrine.¹⁰

The Airman's Perspective

The airman's perspective of operations differs from his land counterpart in several significant ways. The airman's AO and AOR encompass the entire JTF Theater. The air warrior views his battlespace as one of target sets and enemy air defense systems. Boundaries are restrictive measures, useful in preventing fratricide, but best minimized to allow for maximum flexibility in the application of air power. Within this permissive framework, Air Force doctrine delineates three basic methods of force application: strategic attack, air interdiction, and close air support.¹¹

Airpower theorists from Douhet to Warden have espoused the decisive potential of strategic attack. The history of Airpower has been a search for the perfect target set to fulfill these theorists' promises¹². As yet this target set, unique for every conflict, has not been found, although Operation Desert Storm's Air Campaign was very close. Today,

the Air Force continues developing global attack (with emphasis on its strategic nature) as one of its core competencies.¹³ Clearly, strategic attack is the purview of the JFACC.

Close Air Support has existed nearly as long as manned flight. The use of Airpower to deliver a decisive blow against enemy ground forces in contact with friendly forces has become a hallmark of the American way of war. During the 1980s, Airland Battle Doctrine further embraced the concept and integrated it into Joint Air Attack Team (JAAT) techniques to support the ground commander.¹⁴ Though the development of attack helicopters, organic to the land forces, has somewhat diminished fixed-wing CAS's importance on the battlefield, the ground commander's dominant role in controlling fixed-wing CAS (through a forward air controller) is accepted in both services.¹⁵

The contention between the Air and Land Forces concerning the proper role of Airpower chiefly occurs on the topic of air interdiction and its place on the joint battlefield. The seeds of this contention are sustained by technology. Until recently, the services were divided within the battlespace by the relative strengths and limitations of their service specific weapons. The ability of a land force commander to reach beyond the range of his artillery (about 25 kilometers) was nearly non-existent. The effectiveness of Airpower was limited by the inaccuracies of bombing techniques and limited target acquisition assets.¹⁶

During the past two decades, developing technologies have greatly enhanced Airpower's ability to conduct precision attack.¹⁷ Information management and intelligence gathering assets are providing the air commander with increased situational awareness that translates into more effective targeting.¹⁸ The success of Airpower during

Operation Desert Storm proved, according to Airpower advocates, the maturing of Airpower potential as predicted by the early air theorists.¹⁹

Conflicting perspectives pertaining to the proper role of Airpower persist at the highest levels. In early 1996, then Air Force Chief of Staff, General Ronald R. Folgeman, and Army Chief of Staff, General Dennis J. Reimer, openly acknowledged the services' differences over basic issues including control of fires beyond the FSCL but within the LCC's area of operations (air interdiction).²⁰ The paucity of authoritative joint doctrine concerning joint fires coupled with the potential impact of emerging technologies has brought the services to loggerheads over these questions.

Notes

¹ Major Kevin M. Woods, USA, "Deep Battle and Interdiction: Twin Sons of Different Mothers," (Newport, RI: Naval War College, 1997), 1-2.

² Harold R. Winston, "Reflections on the Air Force's New Manual," *Military Review*, November 1992, 29.

³ Woods, 2.

⁴ Ibid.

⁵ US Army Field Manual 100-5, *Operations*, June 1993, 6-12.

⁶ Woods, 3

⁷ FM 100-5, 7-12.

⁸ US Army Field Manual 6-20-10, *Tactics, Techniques, and Procedures for the Targeting Process*, February 1995, 3-5 – 3-6.

⁹ Ibid., 7-13.

¹⁰ Woods, 5.

¹¹ Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine for the United States Air Force*, vol. 1, March 1992, 6.

¹² LTC James Forsythe, interview with author, 2 March 1998.

¹³ Air Force Doctrine Document 1, *Air Force Basic Doctrine*, September 1997, 32-33.

¹⁴ MG Randal Rigby, "FA and the Joint Air Attack Team." Position Paper, August 1996, n.p. On-line. Internet, 13 November 1997. Available from

<http://www.pica.army.mil/orgs/fsa/sad/1996/julaug/tart2pg2html>.

¹⁵ US Air Force Multi Command Manual (MCM) 3-1 *Mission Employment Tactics, Tactical Employment, Forward Air Controller (FAC)*, Vol. VIII, 1988, 1-2.

¹⁶ Daniel Goure and Christopher M. Szara , eds., *Air and Space Power in the New Millennium* (Washington, D.C.: Center for Strategic & International Studies, 1997), 15-16.

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¹⁷ Ibid., 110-112.

¹⁸ Ibid., 121-122.

¹⁹ Rebecca Grant, "Closing the Doctrine Gap," *Air Force Magazine*, January 1997, n.p.; on-line, Internet 12 February 1998, available from http://www.afa.org/magazine/21_century/doctrine_gap/.

²⁰ Ibid.

Chapter 3

Service Component Fire Support: The Fractured Battlespace

Yes, it wasn't always right with doctrine on either side, either green doctrine or blue doctrine, but we made it work.

—Royal N. Moore, Jr¹

The present system of coordinating operational fires is based on division rather than unity. During Operation Desert Storm, the JFC divided the battlespace between the Joint Forces Air Component Commander (JFACC) and the Joint Forces Land Component Commander (JFLCC).² Both component commanders established C3I structures to manage their respective fights and attempt coordination between the services. These structures (the Deep Operations Coordination Center for the LCC and the Air Operations Center for the ACC) overlap in many functions as they relate to coordinating deep attack and air interdiction operations.³

This division of effort is further exacerbated by the individual service components developing their own unique weapons, target acquisition, and information management systems. Some of these systems provide the services with truly unique capabilities, while the capabilities of others overlap with those of other services.⁴ To establish how a joint fire support system might synergize these assets, it is important to review what each service brings to the targeting methodology facets of decide, detect, deliver, and assess.⁵

What will become evident is that the United States Air Force, because of its unique capabilities to quickly focus intelligence gathering and attack assets over any portion of the battlespace, is the preeminent service component for resourcing operational level fires.⁶ Alternatively, because of its central role during *most* joint operations, and its wealth of experience in synchronizing battlefield assets, Army should take the lead in forming an all service joint fire support cell to coordinate inter-service assets to support the JFC's vision of shaping the battlespace with operational fires.⁷

The Decision Function

Once the JFC develops his intent for operational fires, he (like his subordinates at the tactical level) issues his guidance for operational fires to his staff.⁸ Current joint doctrine does not provide the JFC with a coordination cell specifically intended to address operational fires in support of the joint campaign plan. Rather than establishing a unified D3A effort, the service components are expediting division of the battlespace along lines that support the service core competencies.⁹ The JFC's subordinate commanders possess very capable structures to support the decision making process and coordinate operational fires. Within the Army Corps, this coordination structure is the Deep Operations Coordination Cell.¹⁰ The JFACC's Air Operation Center also routinely coordinates attacks at operational depth.

Deep Operations Coordination Center

The JFLCC's primary coordination cell for operational level fire support is the corps' Deep Operations Coordination Cell (DOCC). The mission of the DOCC is to effectively synchronize the deep battle for the corps commander. One function of deep

battle synchronization is to direct the detect, deliver, and assess portions of targeting methodology. The goal of this effort is to meet the corps commander's vision of shaping the battlespace to support subsequent or ongoing surface operations.¹¹

The DOCC contains representatives from various functions including fire support, targeting, special operations, army aviation, air defense, the Air Force, and Navy/Marines. To accomplish its mission, the DOCC requests and receives target acquisition information from the corps' Analysis & Control Element (ACE).¹²

The ACE accesses inputs from national and joint intelligence gathering systems in near real time through a digital communications structure. Once the targeteers in the DOCC receive intelligence queues from the ACE, it uses the commander's fire support guidance to decide what targets to attack and coordinates available joint assets to attack and assess battle damage.¹³ Significantly, many of the assets accessed by the DOCC to fulfill their mission are JFACC controlled.

Air Operations Center

At the theater level, the Air Force counterpart to the DOCC is the Air Operations Center (AOC). The AOC is the senior air operations element of the Tactical Air Control System (TACS) and the focal point for information processing and Air Tasking Order (ATO) development. The AOC functions at the joint force level, normally collocated with the Joint Force Air Component Commander. It provides the facilities, equipment, and personnel to manage air operations for the Joint Task Force.¹⁴

Based on the commander's guidance and the combat situation, the AOC develops the daily ATOs that task assigned air forces with combat and support missions. In response to the dynamics of the battlespace, the AOC can adjust and refine these taskings. The

JFACC exercises centralized control over joint air operations through the AOC, with decentralized execution passed to the subordinate headquarters.¹⁵

To exercise effective control of the air component, the AOC has four internal divisions that support execution, planning, and intelligence functions. These divisions are the Combat Plans Division, the Combat Operations Division, the Enemy Situation Correlation Division, and the Combat Intelligence Division. As their names imply, each has functions that contribute to the targeting methodology of decide (plans), detect (situation correlation), deliver (operations), and assess (intelligence).¹⁶

To manage the application of air power, the AOC also interfaces with the surface force commanders through a network of liaison officers and coordination cells. For our discussion, the most important of these is located in the AOC and is called the Battlefield Coordination Detachment (BCD).¹⁷

Battlefield Coordination Detachment

The Battlefield Coordination Detachment acts as the interface between the land component commanders and the JFACC. The BCD is collocated with the Air Operations Center and expedites the exchange of information between the surface forces and elements of the AOC through face-to-face coordination. The BCD processes land component requests for air support, monitors and interprets the land battle for the AOC, and provides interface for the exchange of current operational and intelligence data. The BCD also coordinates air defense and airspace control issues.¹⁸

The important work of the BCD has historically been hampered by insufficient manning both in numbers of personnel and in experience/rank structure¹⁹. The promise of having a knowledgeable land component representative who can effect direct

coordination of inter-component issues with the JFACC has been missed by the land component. Rather than establish a flexible and responsive system of coordination, the services have been satisfied with dividing the battlespace pie.

Detection and Assessment Assets

Detecting targets identified as high payoff types by the commander is the basis for the fire support system. At the operational level, this facet of the targeting methodology requires the joint fire supporter to “see deep” into the enemy battlespace.²⁰ No other service possesses the multitude and quality of systems capable of supporting this task at the operational level like the United States Air Force. The service’s fixed wing reconnaissance assets provide both strategic and tactical reconnaissance capabilities. Systems such as the Joint Strategic Aerial Reconnaissance System (JSTARS) are capable of locating vehicular targets to operational depth in near real time and with pinpoint accuracy.²¹

An emerging contribution from the Air Force is the endurance oriented unmanned aerial vehicle (UAV). As opposed to tactical UAVs, such as Pioneer and Hunter, that are designed specifically to support a ground force tactical commander, endurance UAVs support the Joint Commander. Their specific goal is to provide the JTF and national command and control nodes with near real time intelligence. These systems also provide the JFFSCOORD with a potential direct sensor to shooter interface.²² Air Force systems such as the Predator, Global Hawk, and Dark Star offer long-range, long-dwell, real time operational intelligence by executing deep penetration of enemy air space and wide area surveillance. When linked with a reliable data dissemination system, the complimentary capabilities of these three UAV systems will provide the joint force commander with the

ability to access usable targeting information against short dwell time target types at operational depth.²³

Both the Navy and Air Force also possess manned, fixed wing aircraft specifically outfitted for tactical photoreconnaissance missions. The most pronounced limitation of these systems is the timeliness of the imagery intelligence (IMINT) they provide. Effective against targets with high dwell times, their greatest value in supporting operational fires may be in providing accurate battle damage assessment following attacks.²⁴

At present, the Army possesses few intelligence gathering systems that can effectively contribute to acquiring targets at operational depth. Currently, only the corps long-range surveillance detachments regularly operate in the area beyond the FSCL. These teams represent a capability to provide sustained surveillance of limited geographic area with near-real time reporting of enemy activity. But the vulnerability of these detachments to hostile action make their utility as a target acquisition asset to the joint force commander problematical at best.²⁵

Future aviation based systems will vastly improve the Army's ability to contribute to the target acquisition effort. The RAH-66 Comanche and AH-64 Longbow Apache will both possess digital satellite up-links that will provide the JFC with real time intelligence of a target area. These systems will be able to rapidly traverse the battlefield and conduct both reconnaissance and attack missions at operational depth. Under some circumstances, they will also be able to operate in high threat areas for fixed wing aircraft. By linking these aircraft with a joint fire support cell, the JFC will be able to

conduct coordinated or phased attacks against enemy high value targets with real time battle damage assessment (BDA).²⁶

United States Space Command's (US SPACECOM) satellite intelligence gatherers have been the mainstays of strategic reconnaissance for decades. Future linking of these assets with a joint fire support cell will provide the joint force fire supporter with the ability to see the battlespace under all weather conditions, day or night, and in real or near real time. This capability is unique in its scope and provides the joint targeteer with the ability to acquire targets in near real time, under all weather conditions, and at depth..²⁷

With the abundance of intelligence gathering / target acquisition systems already in place or scheduled for fielding in the near future, the JTF will enter battle with access to a more perfect picture of the enemy disposition than any previous force. Weaponeering, or mating targets with the most appropriate delivery system based on target type, enemy air defenses, and target dwell time, may be the JFFSCOORD's greatest challenge.²⁸

Delivery Systems

Air Power remains the dominant delivery vehicle for operational level fires. With their ability to quickly mass, conduct precision attack, and with extended range, Air Force, Navy, and Marine fixed wing attack aircraft represent the mainstay delivery systems. Army and Marine attack helicopters contribute by providing a precision engagement capability linked to a low observable system endowed with a long loiter time.²⁹

Fixed wing aircraft such as the F-16, F-15E, and FA-18 will provide the majority of operational fires in support of the JTF, but any airframe, including heavy bombers and

stealth aircraft may provide operational attacks. The fire supporter must remember that there are no tactical, operational, or strategic aircraft, only target types.³⁰

For attack of air defense systems and other targets in high threat areas, the Navy and Army both possess long range, precision guided missile systems. The tactical land attack missile (TLAMS) can strike against high priority targets to ranges of 1000 nautical miles with pinpoint accuracy. Similarly, the Army Tactical Missile System (ATACMS) can deliver payloads such as the brilliant anti-tank (BAT) sub-munition to ranges exceeding 300 kilometers with sufficient accuracy to ensure target acquisition by the BAT.³¹

In the near future, the Navy will provide operational fires in the littorals with a naval gunfire support systems firing the Extended Range Guide Munition (ERGM). This 155mm projectile will either be a laser rider or GPS controlled round with a maximum range in excess of 60 kilometers. The ERGM will be fielded in conjunction with the vertical launch naval gunfire support system aboard future Naval Gunfire Support (NGFS) ships.³²

Finally, both the Navy and Army contribute a variety of electronic jamming assets to provide non-lethal fires to the joint force fire supporter. Systems such as the EA-6B Prowler and EH-60 Quickfix give the joint fires planner attack options beyond simple destruction when engaging enemy C2 and target acquisition systems.³³

The preceding description of coordination cells and D3A assets is not intended to provide the reader with a complete list of capabilities available to the JFC to execute operational fires. But what should become apparent is the web of sensors, shooters, and decision aids rapidly coming under the JFC's disposal. This web becomes more intricate with each new system the services field. On the next battlefield, the JFC must be able to

synchronize these systems to leverage their full potential while minimizing their individual weaknesses. To accomplish this, joint doctrine and service organization must regain the lead in its race with emerging technologies.

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Chapter 4

Digitization of the Battlefield: Enabling Operational Fires

Digitization of information; converting it to zeros and ones, then manipulating, transferring, and displaying it provides probably the greatest technological leap forward on the battlefield since the introduction of the internal combustion engine.

—General Gordon R. Sullivan, Army Chief of Staff¹

To effectively harness the potential of operational fires, joint fire supporters must be able to quickly disseminate targeting and weapon status information in support of D3A efforts. The central enabler of the joint force's unified combat power in the next century will be the digital communications and information processing systems now being fielded by the services. These systems, and the communications architecture they rest on, are the pillar that supports the promise of near total situational awareness. In some instances, these represent second and third generation systems that have profited from the experience of their predecessors. In other cases, the services are fielding totally new, and in a few cases revolutionary, instruments of information warfare.²

A wealth of C3I systems, including the Global Positioning System (GPS) and the Enhanced Position Location and Reporting System (EPLRS), will contribute to the success of operational fires in the 21st century. Two of the most significant for the joint fire supporter are the Advanced Field Artillery Tactical Data System (AFATDS) and the Contingency Theater Automated Planning System (CTAPS). Each of these systems

provides the joint force with capabilities to coordinate the multitude of D3A systems that will be present on the future battlefield.³

Advanced Field Artillery Tactical Data System (AFATDS)

The centerpiece of the effort to fully integrate operational fires is the AFATDS. AFATDS hardware consists of an “off the shelf” computer with a 1GB or larger hard disk drive and containing from 144 to 208 MB of RAM. AFATDS software enables the system to determine target acquisition capabilities, process targets, analyze fire support attack systems, analyze reported BDA, and incorporate target acquisition information into the targeting process.⁴

The system interfaces with the other four components of the Army Tactical Command and Control System (ATCCS) via radio or wire links. These components include a ground maneuver link: the Maneuver Control System (MCS), intelligence link: the All Source Analysis System (ASAS), air defense link: the Forward Area Air Defense System for Command, Control, Communications, and Intelligence (FAADC3I), and logistics link: the Combat Service Support Control System (CSSCS). Once fully fielded, the ATCCS will provide fully automated and integrated command and control of fires from corps to battalion level.⁵

In addition to interfacing with Army automated systems, the AFATDS is capable of interface with JSTARS, CTAPS, and, to a lesser degree, similar computer systems used by the German, British, and French armed forces.⁶ The versatility of AFATDS has convinced the Marine Corps to procure the system as the automated fire support system for their tactical data network (TDN) supporting Marine Expeditionary Forces.⁷ The Navy is also fielding the AFATDS as part of the Combat Information Center (CIC) on

board a limited number of vessels. Included in this number are the assault ships *USS Saipan* and *USS Nassau*, and the destroyer *USS Mitscher*. The command ship *USS Mount Whitney* also mounts an AFATDS in the vessel's Joint Force Air Component Commander (JFACC) cell.⁸

Because three of the four services have adopted the AFATDS to meet their requirement for an automated system to coordinate multi-service fire support assets, the problems associated with interoperability between services will be minimized. The AFATDS has demonstrated its ability to interface with the Air Force's primary information management system in the Air Operations Center, the CTAPS.⁹ The AFATDS embodies the capabilities and expandability required of a system to facilitate joint force operational fires.¹⁰

Contingency Theater Automated Planning System (CTAPS)

Like AFATDS, CTAPS is a hardware/software system composed of a variable number of workstations on a local area network (LAN), plus geographically remote workstation terminals. CTAPS supports both the plans and operations cells in the AOC. Specifically, CTAPS receives processes, maintains, updates and disseminates information on the theater air situation and portions of the land situation considered essential to the air effort. It also assists planners in allocation decisions impacting the ATO and in the generation and dissemination of the ATO to appropriate organizations.¹¹

By interfacing with automated information systems of other services and nations, CTAPS provides the ATO with the capability to coordinate the air operations of both joint and combined operations in support of the JFACC. CTAPS Version 5.1 also supports AOC targeting efforts by linking joint intelligence assets through the Combat

Information System (CIS) and weaponeering through access to the Joint Munitions Effects Manuals (JMEM).¹²

Merging Purple Electrons

The AFATDS and CTAPS have demonstrated their ability to pass basic information between systems.¹³ While this is laudable, the interface capacity required to effectively control and coordinate operational fires remains elusive. A factor in the problem will remain the unique purposes the two systems were designed to meet. The AFATDS is a fire support system with formats and protocols designed to support that specific mission. Likewise, the CTAPS is designed to support AOC operations in control and apportionment of air assets. Though complimentary, neither could take the place of the other, nor can they separately provide all the information needed by joint fire supporters. To achieve decisive operational fires, the JTF must establish a unified coordination cell specifically designed to meet the task.

Notes

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Chapter 5

The Argument for a Unified Fire Support Structure

Joint warfare is team warfare.

—General John Shalikashvili, Chairman, Joint Chiefs of Staff

The Total Force connectivity provided by emerging C3I systems will exponentially increase the effects of fires in the next century. Horizontal and vertical connectivity throughout the joint force holds the potential of linking the sensor to shooter in near real time. The seamless unification (as opposed to integration) of intelligence systems, fire support coordinators, and attack systems at the joint task force level holds the promise of making operational fires the decisive combat power on the battlefield.¹

To accomplish these goals we must develop authoritative joint doctrine on fire support at the Joint Task Force level. Currently Joint Publication 3-09, *Joint Doctrine for Fire Support Operations*, is undergoing its second revision. A final publication date for this critical document has yet to be announced.²

The armed forces of the United States lie on the verge of a tremendous increase in C3I capability, one that will revolutionize the way we view fire support and possibly the manner in which we apply fires on the battlefield.³ In the absence of authoritative doctrine, what follows are suggestions concerning doctrinal issues that must be addressed if we are to reap the full benefit of these emerging technologies.

Control of operational fires consists of two parts: deconfliction and force application.⁴ This paper will propose methods for addressing these requirements. The foundation of any solution must be the designation of a Joint Forces Fire Support Coordinator and a joint fire support cell (JFSC) including representatives from all the services and the Joint Special Operations Command (JSOC). Any solution must also address the contentious issue of Fire Support Coordination Measures (FSCMs).

The Joint Forces Fire Support Coordinator

To realize the full potential of operational fires, the Joint Task Force must include a Joint Forces Fire Support Coordinator (JFFSCOORD). The purpose of this position is to establish a central coordinator responsible for fully integrating the network of systems and technologies operated by the service components to achieve the JTF Commander's stated objectives for operational fires.⁵

The JFFSCOORD will answer directly to the JTF Commander and be his primary assistant and subject matter expert in the application of joint fires. He will advise the commander concerning what fires can and cannot accomplish in the theater and make recommendations to the JFC pertaining to apportionment of assets. He will facilitate the joint targeting board and develop supporting fire plans. Central to his duties will be the requirement to oversee the JFSC and to balance component desires concerning deep attack and air interdiction to achieve the JFC's intent.⁶

The JFFSCOORD may be from either land component depending largely on the JFC's campaign plan. In either case, his deputy should be named from the dominant air component in the theater. Ultimately, the goal of the JFFSCOORD is to seamlessly apply

the unique capabilities of the services to achieve unified combat power (operational fires) within the framework of the joint battlespace.⁷

The Joint Fire Support Cell

The coordinating element for operational fires within the JTF will be a Joint Fire Support Cell (JFSC). This cell should be modeled on the DOCC and be the central agency to enact the fire support guidance provided by the JFC. To facilitate coordination with the JFACC's staff, the JFSC will collocate with the AOC.⁸

The JFSC will consist of representatives from the various service components including Special Operations Command. Operationally, the JFSC will be linked to the Joint Intelligence Cell (JIC) for all sources target acquisition data. Key to coordinating the overall operational fires effort, the cell will maintain continuous communication links with the DOCC(s) and Navy/Marine operations centers.

The goal of the JFSC will be to accept target acquisition data and, based on parameters established by the JFC, coordinate attack of selected targets. Following the attack, the JFSC will coordinate battle damage assessment and direct reattacks as required. Ultimately, the JFSC will be capable of coordinating decisive unified combat power against enemy high value targets in the operational depth of the battlefield. The JFSC will coordinate these fires in conjunction with the AOC and DOCCs without regard to the location of the target, but rather for their impact on the maneuver battle.

The Joint Fire Support Cell will be linked via digital information management systems to national level and service component target acquisition systems. The JFSC will access these assets and focus the most appropriate attack platform to that target. The present AFATDS and CTAPS are the first generation of such systems. As information

warfare matures, even more capable systems will serve as the basis for creating the seamless unified battlespace.

Fire Support Coordination Measures

One of the most contentious issues arising from the Persian Gulf War was the issue of the FSCL and its impact on the application of air power. Adding to this issue is misunderstandings concerning the meanings of various fire support terms.

Doctrinally, the FSCL is a line beyond which any target may be attacked by any system without further coordination. For airmen, this means authority to rapidly attack targets of opportunity at operational depth. But as more surface forces operate to extended distances on the battlefield (attack helicopters, special operations forces, etc.) the land component commander establishing the FSCL is faced with a dilemma: either he can risk fratricide by keeping the FSCL within range of his organic indirect fire systems, or he can move the FSCL out to distances that cover these forces.⁹

During the Gulf War, the Army chose the latter with the result that air interdiction missions became nearly impossible to effect in a timely manner. To partially mitigate this, the JFACC established “Kill Boxes” for air interdiction missions. Like the Army’s doctrinal Free Fire Area (FFA) this was an area in which any target could be immediately attacked. In an attempt to resolve the FSCL problem and delineate where the land force AOR ends and the air component’s AOR begins, several major commands have adopted the Deep Battle Synchronization Line (DBSL) as a boundary between the two forces.¹⁰

All these methods of deconflicting the competing requirements of the two components stem from a lack of situational awareness. As information technologies expand the operator’s ability to accurately see the battlespace, many fire support

coordination measures will become irrelevant. If properly applied, information technologies offer the promise of a truly seamless battlespace with vastly fewer boundaries and coordination lines required to effectively synchronize combat power and prevent fratricide.

Coordinating Operational Fires

Control and coordination are the twin enablers of operational fires. To facilitate direct access to the JFACC, who controls the predominant delivery asset that will execute operational fires, the JFFSCOORD and the JFSC should collocate with the AOC. Collocated with, but operating separately from, the Air Operations Center, offers three distinct advantages for the JFFSCOORD.

First, the JFSC's presence at the AOC will allow it to more efficiently leverage the target acquisition and delivery assets prevalent at operational depth and integrate them to achieve the JFC's intent for operational fires. Second, the JFFSCOORD, as a senior land component officer, can provide the JFACC with the land warrior's perspective concerning air operations. The JFFSCOORD presence in the AOC will contribute to inter-service trust and cooperation. Regardless of what apportionment and targeting decisions are made by the JFACC to support the JFC's intent, the land component commanders will know that their perspective was voiced. Finally, the JFFSCOORD provides the joint force with a conduit between the JFLCC and the JFACC. His presence at the AOC will give the JFFSCOORD a broader perspective of the theater and the JFACC's competing requirements that he can then communicate with the JFLCC.

In addition to the structure of the JFSC/JFFSCOORD, the utility of FSCMs also needs to be addressed in joint doctrine. The Deep Battle Synchronization Line (DBSL)

should be adopted to denote the delineation between the JFACC and JFLCC AORs. The DBSL would be doctrinally located approximately 150 kilometers forward of the FSCL thus providing the JFLCC the battlespace needed to exercise his deep attack options. This distance would, however be situationally dependent and could be moved much closer to the FSCL in defensive operations.

The FSCL would remain as a permissive FSCM located not more than thirty kilometers forward of the Forward Line of Troops (FLOT). This distance represents the average distance forward of the FLOT that the corps commander can affect with the Multiple Launch Rocket System (MLRS).

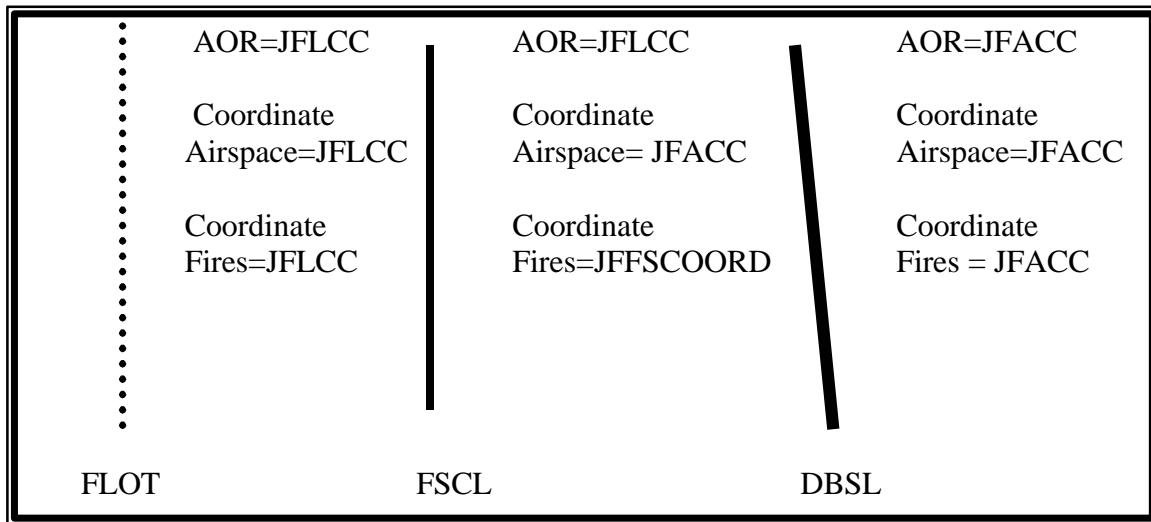


Figure 2. AOR Delineation

Between the FLOT and the FSCL, the JFLCC retains authority for airspace coordination and control of fires. Past the DBSL, all these functions are the responsibility of the JFACC. Between the FSCL and DBSL, the JFACC retains authority as the airspace manager, but all fires will be coordinated through the JFFSCOORD at the AOC.

Many Airpower advocates have already voiced opposition to the Joint Force Fire Support Coordinator concept. Their perception of the JFFSCOORD is that of an attempt by the land component to co-op a portion of the JFACC's authority. They also see the JFSC as redundant to the AOC that now coordinates air attacks alone.¹¹

Joint doctrine must address these concerns. Although both JFACC and JFFSCOORD will work for the JFC, the JFACC is clearly *the* air component commander. The JFFSCOORD can inform and advise the commanders, but apportionment and similar issues will remain the purview of the JFC and JFACC.

Similarly, the JFSC, manned by experienced soldiers, sailors, marines, *and* airmen should be perceived as an enhancement of the AOC, not an attempt to occupy it by force. The officers and NCOs of the JFSC will bring a wealth of experience and knowledge into the AOC that cannot help but benefit everyone involved.

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Chapter 6

Summary

Allied commanders depend on mutual confidence. How is mutual confidence developed? You don't command it...By development of common understanding of the problems, by approaching these things with the widest possible basis with respect to each other's opinions, and above all, through the development of friendships, this confidence is gained in families and in Allied Staffs.

—General of the Army Dwight D. Eisenhower¹

The digitization of the battlefield and the full adoption of joint warfare by the American military presents joint force operators and fire supporters with the opportunity to create a battlespace without the artificial fractures of restrictive boundaries and coordination lines. This seamless battlespace will be characterized by full tactical awareness of friendly force location and status, not only for ground elements, but for air and naval components as well.

As appealing as this prediction may be to those hungering for a revolution in military affairs, the reality is that we aren't there yet. While preparing for tomorrow's opportunities, we must be ready to fight our next battle today. Achieving synergy in operational fires today, requires us to work more jointly and establish workable doctrine that accepts new technological innovations as they occur. Central to achieving full synergy in such an environment, is centralized controlled and decentralized execution of operational fires. The suggestions presented in this paper are designed to more

effectively control operational fires today, while posturing us to exploit technological advances in information management and target acquisition. A Joint Forces Fire Support Coordinator and Joint Fire Support Cell as part of the Air Operations Center will ensure unified combat power is efficiently and effectively applied at the operational level. It also places a flexible fire support structure in position to leverage tomorrow's seamless battlespace.

Yet to exploit these possibilities, the service components must put aside parochialisms and relinquish some control of service specific systems to the centralized control of the JFFSCOORD. Such a proposal will doubtless encounter significant institutional friction in regards to both manning and scope. Each service must provide access to assets in support of this unified effort. Each service must relinquish a certain amount of control over their AORs. But if properly coordinated, the benefits of operational fires are potentially decisive and will, at a minimum, reduce casualties during ground operations.

The future holds the promise of near total situational awareness for the tactical operator. Satellite up-links, digital information systems, and real time tactical feeds will revolutionize the way we fight. Within such a combat environment, operational level fire supporters will be able to rapidly focus the unified combat power of all services' targeting and engagement systems across the geographic and temporal depth of the battlespace. By rapidly applying unified combat power to decisive operational points, the joint fire support system will shape the battlespace in concert with the JFC's vision of how to achieve military and national objectives.

Notes

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Glossary

ACC	Air Component Commander
ACE	Analysis and Control Element
AFATDS	Advanced Field Artillery Tactical Data System
AO	Area of Operations
AOC	Air Operations Center
AOR	Area of Responsibility
ASAS	All Source Analysis System
ATACMS	Army Tactical Missile System
BCD	Battlefield Coordination Detachment
CAS	Close Air Support
CTAPS	Contingency Theater Automated Planning System
D3A	Decide, Detect, Deliver, Assess
DBSL	Deep Battle Synchronization Line
DOCC	Deep Operations Coordination Center
FLOT	Forward Line of Troops
FSCL	Fire Support Coordination Line
FSCM	Fire Support Coordination Measure
JFACC	Joint Force Air Component Commander
JFC	Joint Force Commander
JFSC	Joint Force Fire Support Cell
JFFSCOORD	Joint Force Fire Support Coordinator
JFLCC	Joint Force Land Component Commander
JSEAD	Joint Suppression of Enemy Air Defenses
JTF	Joint Task Force
LCC	Land Component Commander
TLAMS	Tactical Land Attack Missile

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